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NPIC/R-349/64
June 1964

PHOTOGRAPHIC INTERPRETATION REPORT

RECENT ADDITIONS TO SOVIET VLF FACILITIES

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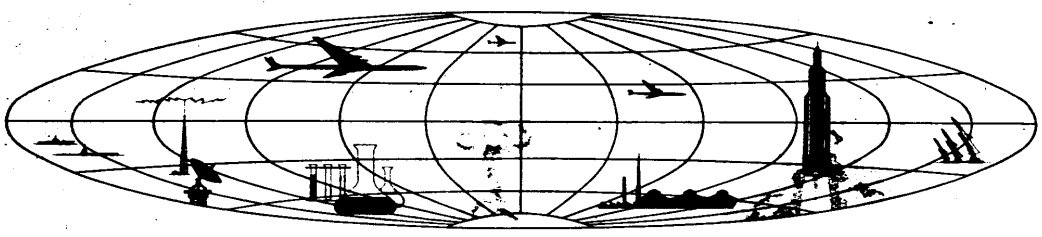

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RECENT ADDITIONS TO SOVIET VLF FACILITIES

INTRODUCTION

Recent photographic coverage has revealed two large antennas under construction, one near the town of Bolotnoye and the other near Krasnoarmeyskaya. On the basis of a comparison with other known antennas in the USSR, it has been determined that the two new antennas, described in detail below, are very low frequency (VLF) type antennas which will probably operate within the true VLF range.

This growth and expansion of facilities indicate a continuing Soviet interest in VLF propagation. They suggest, for example, the need for a more reliable communications system with respect to surface vessels and submerged craft. At the same time, numerous collateral documents 1-7/ demonstrate a steady broadening of VLF usage and function beyond its accepted use for long-range naval communications. Intercepts from operational sites already show the use of VLF by the Strategic Rocket Forces. Other intercepts have indicated that VLF is being used as a backup during space operations and also as a navigational aid, systems in which the VLF stations operate independently of each other in contrast to slave-type systems. Future photographic coverage of the USSR will enable continuing evaluation of Soviet interest and success in the field of VLF communications.

DETAILED DESCRIPTION

Bolotnoye

The Bolotnoye VLF Station (Figure 1) is situated at 55-45-15N 84-26-00E, 5.5 nautical miles (nm) north-northeast of the town of Bolotnoye and approximately 70 nm northeast of Novosibirsk. The station has a hexagonal shape with sides 1,980 feet in length, and a control area under construction near the center of the hexagon. Overall, the installation was about 70 percent complete in February 1964, with guy anchors complete for a center tower and for three perimeter towers. The central control area presently consists of two buildings, one of which will most likely contain a helix coil. There are at least four additional buildings, situated just southwest of the antenna perimeter, which will probably serve as a permanent support area. The facility is road served and no security measures are visible.

Krasnoarmeyskaya

The Krasnoarmeyskaya VLF Station (Figure 2) is situated at 45-24-20N 38-09-40E, 3.2 nm northwest of the town of Krasnoarmeyskaya near the Black Sea. On photographic coverage

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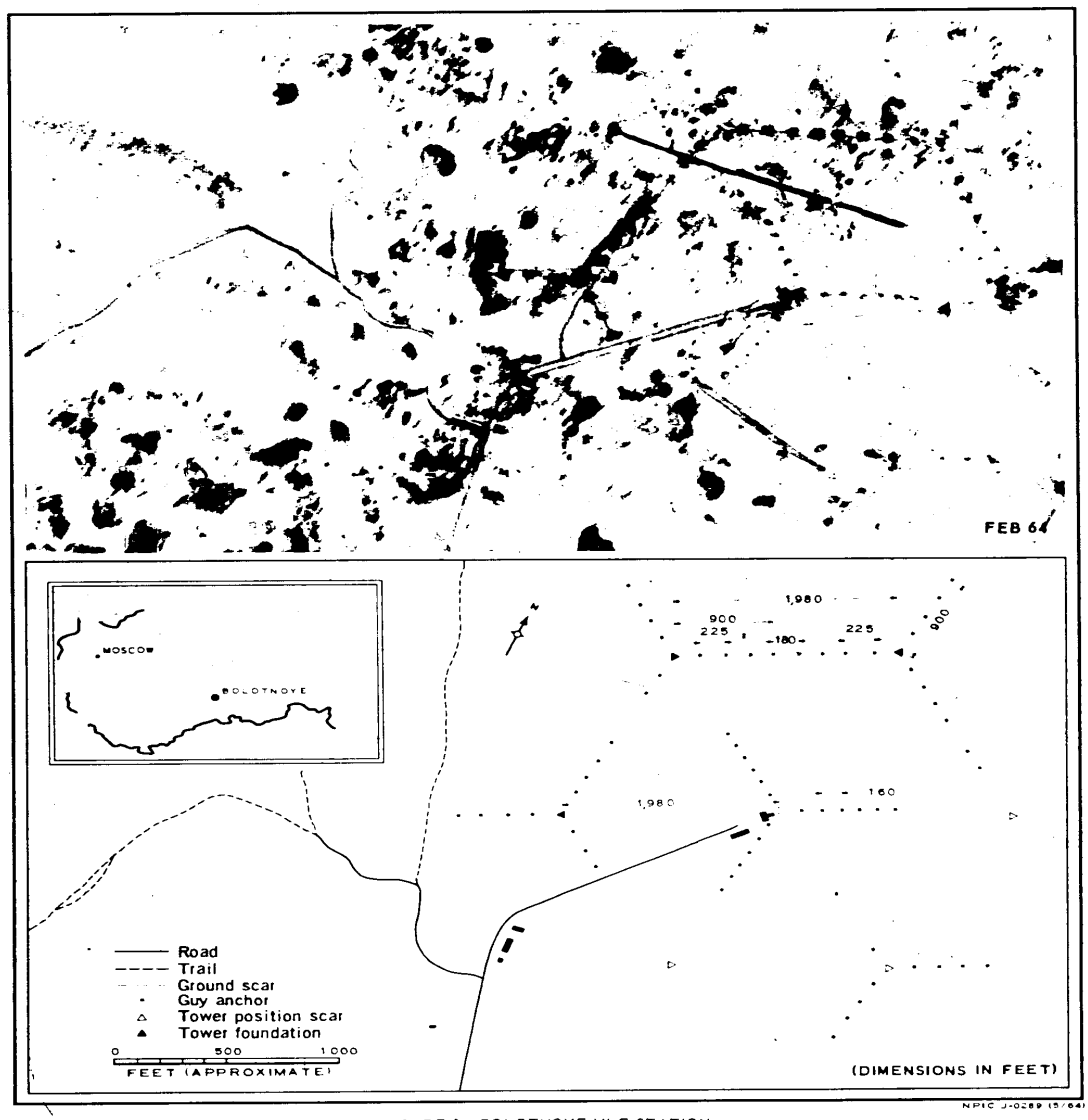

FIGURE 1. BOLOTNOYE VLF STATION.

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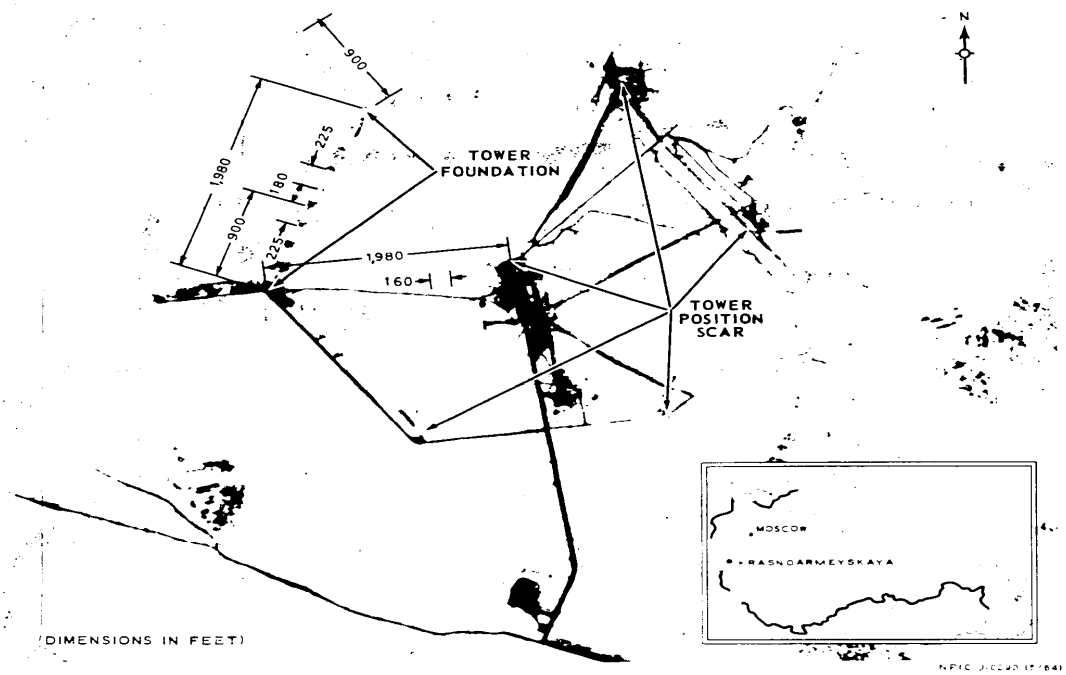
of February 1964, this station appears identical in every respect to the one at Bolotnoye except for a somewhat smaller building count. The site is hexagonally shaped with sides 1,980 feet in length, and with a control area nearing completion near the center of the hexagon. The facility appears to be about 50 percent complete, with construction started for seven towers and the guy anchors and foundations complete for two of the perimeter towers. The site is road served, does not appear to be fenced, and has a possible substation situated at the junction of the access and main roads.

Comparison With Vileyka VLF Antenna

The antenna at the Vileyka VLF Station, described in detail in NPIC/R-98/64, February 1964, 8/ is composed of three contiguous hexagonal configurations. The two new antennas under construction are virtually identical to any one of the three Vileyka units (Figure 3). This comparison includes not only overall size and shape, but extends down to such minor details as spacing between anchors and the number of anchors per tower.

When complete (Figure 4), these antennas



2. KRASNOARMEYSKAYA VLF STATION, FEBRUARY 1964

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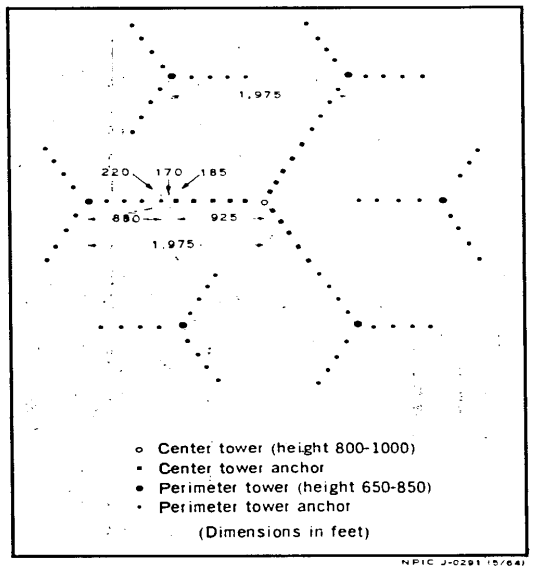

FIGURE 3. VILEYKA VLF STATION: ONE OF THREE CONTIGUOUS HEXAGONAL CONFIGURATIONS.

will probably have seven guyed towers, one at each vertex angle around the perimeter and a seventh, probably taller tower at the center. Even though the towers have not yet been erected at the two new stations, it seems reasonable to assume that their height will be similar to those at the Vileyka station, namely 800 to 1,000 feet for the center tower and 650 to 850 feet for the perimeter towers. Each perimeter tower will have three guy-anchor legs with four guy anchors on each leg, spaced about 225 feet apart. The center tower will also have three guy-anchor legs, but each leg will have six anchors spaced about 160 feet apart. The towers will probably support a canopy of wires and, if the similarity to the Vileyka antenna continues, there will be a buried ground system. On the basis of known measurements and apparent similarity, it seems highly probable that the new antennas will operate in the same 13 to 29 kilocycle range as does the Vileyka antenna.

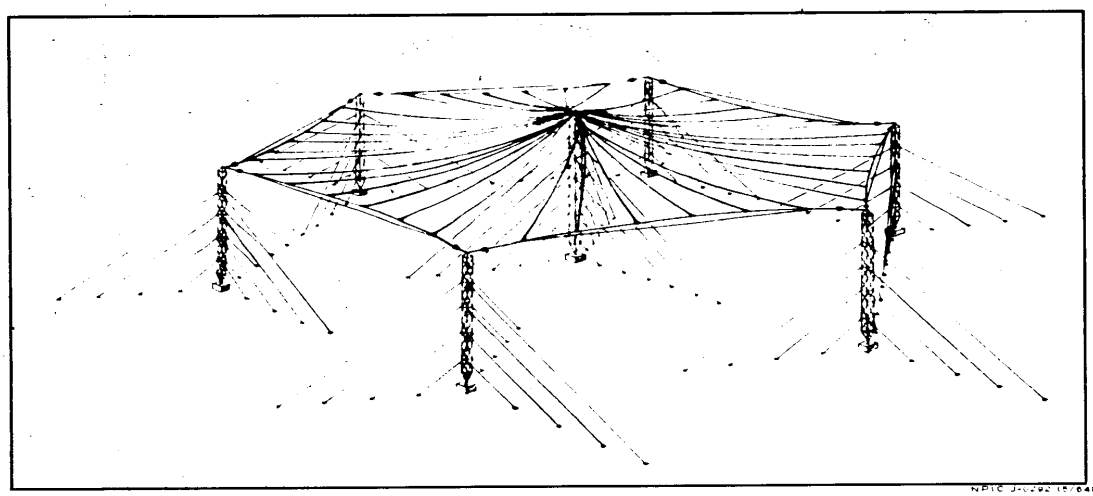

FIGURE 4. CONCEPT OF VLF-TYPE ANTENNA (CANOPY DESIGN BASED ON GOLIATH VLF ANTENNA).

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REFERENCES

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[redacted]

MAPS OR CHARTS

SAC. US Air Target Chart, Series 200, Sheet 0161-1A, 1st ed, Jul 59, scale 1:200,000 (SECRET)

DIA. US Air Target Chart, Series 200, Sheet 0249-17HL, 3d ed, Aug 63, scale 1:200,000 (SECRET)

DOCUMENTS

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3. CIA. SC No 02766 '63, 24 Oct 63 (TOP SECRET DINAR)

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7. CIA. SC No 07692 '61 (OSI-SD-SC '61-15), 24 Jul 61 (TOP SECRET DINAR)

8. NPIC. R-98 '64. *VLF Station; Vilcyka, USSR*. Feb 64 (TOP SECRET RUFF)

REQUIREMENT

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NPIC PROJECT

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